

Active Teaching-Learning Methodologies in an Undergraduate Course of Medicine with a Traditional Curriculum: Students' Perception

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Abstract

The current technological configuration added to the present social demands in health make it necessary to review the teaching-learning methodologies applied during the graduation of the medical professional. Those necessities are addressed by the National Curricular Guidelines, which preconize the adoption of methodologies that stimulate the student's autonomy and put the faculty in compliance with the current situation. To obtain a panorama about the medical students' perception in a college of a inland city of the São Paulo state in relation to the Active Teaching-Learning Methodologies (ATLM) this cross-sectional, descriptive-exploratory, quantitative analysis was carried out where the participants were students of the Medical School of São José do Rio Preto - FAMERP in 2017. Through a mixed questionnaire, that is, with open and closed questions, data were collected necessary to reach the objective. A total of 364 students participated, of whom 70.9% agreed they would like to use ATLM more often. Regarding the role of the student: 80.7% agreed that ATLM stimulate the study; 73.3% agreed that group activities support learning; 44.2% disagreed that students are not prepared for ATLM due to lack of maturity and 51.1% agreed that they are unprepared to use ATLM for being accustomed to traditional teaching methods. Data show that, even though they do not attend classes with ATLM frequently, the students can be very interested in execute them. Emphasis is given to his intense perception of learning in these moments. The student profile that compares with the ATLM is the one that knows them, that is, those who have had contact with such methodologies want to use them more frequently. In addition, students consider that the teachers' role should be that of a learning facilitator, who guides the studies so that the academic goals are achieved.

Keywords: Medical education; Active learning; Perception; Students;

1. Introduction

Active Teaching-Learning Methodologies (ATLM) are understood to be the set of strategies used in the teaching-learning process of learners which place them as protagonists of their own training, being based on a significant theoretical principle: autonomy (Freire, 2002).

The application of the outline of the first methods of active and significant Teaching-Learning dates from a few centuries before Christ, but its systematization and application in higher education in the health area only occurred from the second half of the 20th century, for example, the Problem-Based Learning (PBL), applied in Canada in the 1960s (Barbosa & Moura, 2013).

The pressing need to rediscuss the teaching-learning processes in the health area of undergraduate courses is contemporary and is based on several causes, which in turn originate from the current technological configuration and population demands in health.

In terms of technology, we can address, for example, the production of knowledge at very high speed, which makes the professional responsible for his own updating. Therefore, it is interesting that the professional “learns to learn” in his graduation (Mitre *et al.*, 2008). Regarding the social issue, we must pay attention to the National Curriculum Guidelines (NCG), regulated in 2001 and updated in 2014, which emphasize the importance of the critical reflection and creativity skills of the professional inserted in the

Unified Health System (UHS), in addition to recommending the use of methodologies that privilege the student's active participation in the construction of knowledge and integrate the learned content (Mello *et al.*, 2014). The Brazilian population aging, for example, requires a professional attentive to the integrality of the individual, with a biopsychosocial look at the health-disease process, and not with only a biological approach (Xavier & Koifman, 2011). The interdisciplinarity and teamwork recommended by the ATLM, to the detriment of passive information acquisition, appear as possible tools to obtain this skill.

Given these circumstances, we are invited to abandon old ways of storing and reproducing knowledge and to opt for the use of tools that better explore the student's criticism, creativity and dynamics (Ponciano *et al.*, 2017). These tools, grouped under the name of "active Teaching-Learning methodologies" (ATLM), are based on three main interfaces to meet current demands: promoting learner's autonomy, the concept of school as a community and promoting pluralism (Puig, 1998; Berbel, 2011; Paiva *et al.*, 2016). Among the existing ATLM, they stand out for their effectiveness and frequency of use: PBL / ProblBL (problem-based learning), ProjBL / ABProj (project-based learning), Team Based Learning (TBL), portfolio, peer instruction, just-in-time teaching and role play.

When considering the learning context, it is essential to understand the way students perceive these contexts and understand how these perceptions influence students' approaches in their studies. The perceptions of students largely contribute to their experiences in higher education. These perceptions are closely linked to their expectations. Concerning encouraging the involvement of students with learning through any methodology, we should discuss their expectations more deeply. Being more attentive to expectations throughout a program can help us to better understand their subsequent perceptions and approaches to learning. (Tudor *et al.*, 2015).

Compared to this range of active methodologies, this work sought to obtain an overview of the perception, performance and degree of affinity of learners of a medical course regarding the ATLM. Such an approach allows us to: define the learners' profile which complies with the ATLM; analyze the adaptation of the subjects of institution regarding the ATLM from the learner's point of view; and generate curiosity and reflection in the learners on the issue.

2. Method and procedures

2.1 Design Study

This is an observational, cross-sectional analytical study, of descriptive-exploratory nature, for which quantitative methods of primary data collection were used (Hochman *et al.*, 2005; Bordalo, 2006; Rodrigues, 2007) regarding the perception that participants have on Active Teaching-Learning Methodologies (ATLM). The information was obtained through a structured questionnaire specifically formulated for this purpose, according to guidelines issued by Marconi & Lakatos (2003) and Dalfovo *et al.* (2008).

2.2 Data collection and Study participants

Data were collected from medical school learners at the Medical School of São José do Rio Preto - FAMERP. Students enrolled in the aforementioned institution during the year 2017 aged 18 years or over were included as participants in the research. Students who refused to participate or did not complete the

questionnaire were excluded.

The questionnaires were applied to learners in their academic environment, such as theoretical classrooms and laboratories. First of all, students from the 1st, 2nd and 6th grades of 2017 answered, followed by students from the 3rd, 4th and 5th grades.

2.3 Survey instruments

The questionnaire was composed of three parts, with open and closed questions. The first part referred to the identification of the participant; the second inquired about the knowledge about the ATLM; and the third dealt with the learners' perception compared to the same methodologies. Among the closed questions, we had some of them elaborated according to the Likert Scale, which allows the participant to express his position in relation to a statement, checking one of the following options: totally agree, partially agree, indifferent, partially disagree and totally disagree (Amaro *et al.*, 2005).

2.4 Data analysis

The exploratory analysis of the data included mean, median, standard deviation and variation for continuous variables and number and proportion for categorical variables. Correlation analysis statements were performed using test t Student and Pearson's correlation coefficient. Statistical analysis was performed using IBM-SPSS Statistics version 24 (IBM Corporation, NY, USA). All tests were two-tailed and P values <0.05 were considered significant.

2.5 Ethical considerations

The participants were informed about the importance of this research and the contribution it can bring to the medical-academic environment; after that, they were presented with the Free and Informed Consent Term – FICT, which they were able to sign before answering the questionnaire. Study approved by the Research Ethics Committee of the Medical School of São José do Rio Preto - CEP / FAMERP under number CAAE: 66603517.7.0000.5415.

3. Results

Considering the inclusion and exclusion criteria, as well as the learners' interest in participating in the study, the number of 364 participants was reached, about 80% of the total enrolled in the year 2017.

3.1 Identification of participants

From the first part of the questionnaire, with regard to the identification of the participants, an average age of 22 was obtained, distributed by age groups and grade as shown in Table 1. Regarding gender, 53% reported female gender and 46 , 4%, male; two participants (0.6%) did not declare.

Table 1. Analysis by age and course grade (n = 364; 2017)

AGE (years)	ABSOLUTE VALUES	%	GRADE	ABSOLUTE VALUES	%
18 - 21	127	34.9	1 st .	76	20.9
22 - 25	176	48.4	2 nd .	68	18.7
26 - 30	46	12.6	3 rd .	60	16.5
> 30	3	0.8	4 th .	55	15.1
Did not answer	11	3.0	5 th .	52	14.3
			6 th .	53	14.5

3.2 Participants' knowledge of ATLM

Given the question "How do you evaluate your knowledge about ATLM?", The participants were able to choose scores from 0 to 10. Thus, 21.1% informed score 0; 22.8% scores between 1 - 3; 37.6% between 4 - 6; 17.3% between 7 - 10; and four participants (1.2%) did not evaluate themselves.

After that, it was asked "Of the methods below, which one have you heard about?". The following methods were cited: Problem Based Learning (PBL), Team Based Learning (TBL), Project Based Learning (ProjBL), Portfolio (PORT), Peer Instruction (PI), Just-In-Time Teaching (JITT), Role Play (RP), Others, with specific field for mention by the interviewee, and None. In descending order, the most noted were PBL> PORT> TBL> JITT> RP> PI> ProjBL. Among the three best known methodologies, the frequency of citation was 98.1%, 89% and 76.1%. The least mentioned was ProjBL (6.3%). The entire sample indicated at least one ATLM and no participant marked the "Others" field.

Also about the presented methodologies, it was asked "Of the methods below, which one would you know how to explain the way it is applied?". In descending order, we had the answer PBL> TBL> PORT> JITT> RP> PI> ProjBL. No participant mentioned other types of ATLM in the space provided for that purpose. The method that most students claimed to have ownership is PBL (70.6%), followed by TBL (64%). Regarding the application of the PORT, 60.7% answered positively. Only 2.2% of the participants claimed to have ownership over the application of ProjBL and 4.9% claimed not to be able to explain about the application of any form of ATLM.

Still using the list of methods presented, it was asked "Of the methods below, which ones have you participated in?". Again in descending order, we had the answer PORT> TBL> JITT> PBL> RP> PI> ProjBL. We emphasize that 73.1% have already participated in PORT and 66.5% in TBL. However, 11.5% said that they have never participated in activities that used ATLM. After that, it was asked "In how many subjects do you participate / did you participate in activities that used ATLM?". Of the total involved, 15.7% stated that they have already used ATLM in one subject; 51.6% in two subjects; 16.5% in three or more subjects; 16.1% stated they had never participated in any of the activities listed and 0.6% did not answer. Then, it was asked "Of these, which subjects do you consider that use / used ATLM most often?". We had as answers the following subjects: Embryology (188 answers)> Public Health (145 answers)> Histology (19 answers)> Physiology (17 answers), Cross-cutting Issues (17 answers)> Medical Clinic (6 answers), General Surgery (6 answers)> Activities in the Skills Laboratory (5 answers)> Biochemistry (2 answers),

Cell Biology (6 answers), Pathology (3 answers)> Anatomy (2 answers)> Genetics (1 answer), Humanistic Formation (1 answer) , Pediatrics (1 answer), Physicochemical Chemistry * (1 answer), Morphofunctional * (1 answer), Mentoring * (1 answer). The subjects followed by an asterisk were not taken at the institution where the present study was conducted.

At the end of the second part of the questionnaire, the participants used a Likert Scale given the statement “You would like to carry out activities which are based on ATLM more often”. The answers are shown in

Table 2 - Perception of learners regarding ATLM					
Statement	TA	PA	I	PD	TD
You would like to perform activities which are based on ATLM more often	28.9% (105)	42.4% (154)	20.1% (73)	5.2% (19)	3.3% (12)
<i>Legend: TA (Totally Agree); PA (Partially Agree); I (Indifferent); PD (Partially Disagree); TD (Totally Disagree). About 0.5% did not answer.</i>					

Finishing the second part of the questionnaire, the participants used a Likert Scale

3.3 Student's role in the view of ATLM

In the third and final stage, the participants also used the Likert Scale to position themselves regarding the statements. About the student's role in the view of ATLM, six notes were made. The results are shown in Table 3.

Table 3 - Student's role in the view of ATLM					
Statement	TA	PA	I	PD	TD
ATLMs encourage study	30.7% (110)	51.6% (185)	13.7% (49)	2.8% (10)	1.1% (4)
Activities carried out in teams/groups favor learning and content fixation	96.2% (94)	48.3% (173)	13.4% (48)	9.8% (35)	2.2% (8)
The discussion of cases during the learning process better enables the student for the moments of decision making	44.7% (160)	45% (161)	8.4% (30)	1.4% (5)	0.5% (2)
The use of ATLM favors the retention of knowledge	27% (97)	50.5% (181)	17% (61)	4.2% (15)	1.1% (4)
Students are not prepared for ATLM due to lack of maturity	7.5% (27)	25.4% (91)	22% (79)	37.1% (133)	7.8% (28)
Students are not prepared for ATLM as they are used to the traditional method	12% (43)	40% (143)	19.3% (69)	22.6% (81)	6.1% (22)
<i>Legend: TA (Totally Agree); PA (Partially Agree); I (Indifferent); PD (Partially Disagree); TD (Totally Disagree). About 0.5% did not answer.</i>					

3.4 Teacher’s role in the view of ATLM

Still regarding the third part of the questionnaire, four statements were made regarding the teacher’s role in the view of ATLM. The results are shown in Table 4.

Table 4 – Teacher’s role in the view of ATLM					
Statement	TA	PA	I	PD	TD
The teacher will have less work	4.2% (15)	13.7% (49)	24.6% (88)	46.3% (166)	11.2% (40)
The teacher will spend less time preparing activities	2% (7)	11.7% (42)	20.4% (73)	54% (193)	12% (43)
The teacher does not need to have as much knowledge as in traditional methodologies	5.3% (19)	8.6% (31)	10.3% (37)	38.2% (137)	37.4% (134)
Less teachers are needed, generating less cost for colleges	3.6% (13)	13.7% (49)	26% (93)	36.3% (130)	20.3% (73)

Legend: TA (Totally Agree); PA (Partially Agree); I (Indifferent); PD (Partially Disagree); TD (Totally Disagree).
About 0.5% did not answer.

3.5 Teacher’s role in the current educational context

To complete the questionnaire, the interviewees were asked to choose three options from those presented to answer the following question: “What is the teacher’s role in the current educational context?”. The answers are in Table 5.

Table 5 - “What is the teacher's role in the current educational context?”	
Direct the study	292 answers → 80.21%
Create strategies which favor learning	236 answers → 64.83%
Clear doubts	216 answers → 59.34%
Arise interest in the student	164 answers → 45.05%
Solve learning problems	120 answers → 32.96%
Provide all content that will be evaluated	49 answers → 13.46%
Adapt to innovative methodologies	41 answers → 11.26%
Value students’ discipline/respect	35 answers → 9.61%

3.6 Correlational analyzes

After the correlational analyzes, it could be identified that female students agree more than male students, significantly ($p = 0.02$), that the discussion of cases during the learning process better enables the student for decision-making moments and that male students agree more that the teacher will have less work and spend less time preparing activities, significantly ($p = 0.003$ and $p = 0.004$, respectively).

The greater the age range of the students, the higher the scores for their knowledge of ATLM (positive correlation / $r = 0.1128$, and significant correlation / $p = 0.038$), they would like to perform more activities

which are based on ATLM at other times (positive correlation / $r = 0.1071$, and significant correlation / $p = 0.041$), agree more than discussion of cases during the learning process better empowers the student for decision making moments (positive correlation / $r = 0.1134$, and significant correlation / $p = 0.0345$), agree more that students are not prepared for ATLM due to lack of maturity (positive correlation / $r = 0.1211$, and significant correlation / $p = 0.0111$) and agree less (negative correlation / $r = 0.1365-0.1482$, and significant correlation / $p = 0.005$) that the teacher will have less work.

Students who were in more advanced grades had higher scores for their knowledge of ATLM (positive correlation / $r = 0.1444$, and significant correlation / $p = 0.0062$) and agree less (negative correlation / $r = -0.1482$, and significant correlation / $p = 0.005$) that the teacher will have less work.

Students who participated in more subjects which used ATLM had higher scores for their knowledge of ATLM (positive correlation / $r = 0.1271$, and significant correlation / $p = 0.0177$) and would like to perform more activities which are based on ATLM at other times (positive correlation / $r = 0.1777$, and significant correlation / $p = 0.008$).

4. Discussion

The data collection instrument used allowed not only to obtain an overview of the learners' perception regarding the ATLM, but also to define students' profiles which comply with it, to verify the percentage of students who would like to use ATLM in more activities, to identify subjects that use this tool more often and check how students view their position and that of instructors regarding such methodologies.

4.1 Perception of knowledge about ATLM

Approximately half of the students declared to have a very low knowledge about the ATLM (43.9% reported scores between 0 - 3 on a scale of 0 - 10, with almost half of them giving a score of 0 for their knowledge). The analysis of this call makes us think that perhaps many of them did not pay attention to the meaning of the acronym ATLM, although this was written at the top of the questionnaire. An alternative hypothesis to justify these data is the fact that, although the participants have already had experiences with ATLM, they have never encountered the theorization of this pedagogical resource, using active methodologies without knowing what they were. Still regarding the knowledge about the ATLM, this is higher, significantly from a statistical point of view, the older the student's are, the more advanced he is in the course and the more they had participated in subjects that used the ATLM, showing the direct relationship with the distance from high school and pre-university entrance courses totally based on little active methodologies. Being more advanced in the course increases the chance of the student having been exposed to ATLM since the use of them is not a "rule" among Famerp subjects.

Regarding to "Of the methods below, which one have you heard about?", The most noted were PBL, PORT and TBL. The first lives up to the fact that it is one of the most popular ATLM, being used in many other medical schools (Escolas Médicas do Brasil, 2020). The other two are basically the two ATLMs officially discussed at Famerp, converging on the broad knowledge of the students. The perception of individualized knowledge regarding ATLM is also expressed in the question "Of the methods below, which one would you explain how it is applied to?", for which PBL, TBL and PORT were also pointed out, probably for the

same reasons already mentioned.

As for “Of the methods below, which ones have you participated in?”, The PBL loses space for another ATLM and the three most cited were TBL, PORT and JITT. The first two are officially discussed by the institution's subjects. The third is also used, but the name JITT is not propagated, which may justify the large distance between the frequency of use of JITT verified in the data obtained when compared to the first two. When inquired about how many subjects used ATLM, 11.5% considered never having participated in activities involving such methodologies, which contradicts the finding of the previous question, in which all participants reported having participated in at least one type of ATLM, referring again to the question of using active methodologies without knowing what they were. Regarding the most cited subjects that used ATLM, we had Embryology, Collective Health and Histology, precisely the subjects that use the ATLM most cited by students, which, respectively, are TBL, PORT and JITT and taught in the initial grades of the course.

4.2 Learners' profile and ATLM

Regarding the statement “Would you like to carry out activities which are based on ATLM more often”, 70.9% partially or totally agreed. This index is higher than that found at the Federal University of Rio de Janeiro, by Gomes *et al.* (2010), which applied questionnaires to students who have contact with ATLM in their subjects in order to know the percentage of those who considered that such methodologies contributed to learning, having found the value of 60%. A study with undergraduate nursing students, carried out by Sousa *et al.* (2018), demonstrated that 80% of the interviewed student identified themselves with practical and dynamic activities which favor the interaction between teacher and student. The preference for ATLM can reach all learners, as demonstrated by Carvalho *et al.* (2016), who observed 100% of the interviewed dentistry students agreeing that the use of active methodologies in graduation is valid.

The answers to that statement were also analyzed by separating them by course grade, age and self-assessment scores, in order to define the student's profile which complies with the active methodologies. Therefore, 77.6% of first grade students agreed with the statement; 64.7% of the second grade; 89.8% of the third grade; 65.4% of the fourth grade; 53.8% of the fifth grade; and 71.6% of the sixth grade. Discrepancies between grades may reflect the change in the curricular structure that the institution has been suffering in recent years or simply the heterogeneity that exists among students. However, it is noticeable that there is no clear trend that shows that one grade is specifically more favorable to the use of ATLM.

As for the age of the participating learners and their degree of agreement with the same sentence, 74% between 18 - 21 years old agreed; 69.3% between 22 - 25 years old; 73.9% between 26 - 30 years old; and 100% of those over 30 years old. The significant increase in agreement with this sentence regarding the increased age again refers to the distance from high school and pre-university entrance courses and the greater chance of the student having been exposed to ATLM.

Finally, comparing the self-assessment carried out by the learners regarding their knowledge of ATLM and the agreement with the aforementioned statement, 49.3% of those who assigned a score of 0 to themselves agreed; 71.0% with scores between 1 - 3 agreed; 77.3% between 4 - 6 agree; and 84.1% between 7 - 10 agreed. It is interesting to observe that the percentage of students who agreed with the statement grows as the scores given by the students themselves increase, that is, the more knowledge the learners expressed

having about the ATLM and the greater the participation in subjects they used the ATLM the greater the desire to carry out more activities with these methodologies.

Given these data, we can infer that the learner's profile which complies with the ATLM is the one that knows them, that is, those who have had contact with such methodologies want to use them more often.

4.3 Learners' perception regarding ATLM

In the third stage of the questionnaire, the intention was to verify how the relationship between learners and instructors with the ATLMs occurs from the students' perspective. The learners' impressions refer to the effectiveness of ATLM in contributing to their learning and the degree of personal aptitude in using them. Regarding the instructor, the learners' perception of the degree of knowledge and the necessary dedication of the teacher to perform ATLM was illustrated, as well as the teaching function that students believe to be the most relevant in the current scenario of education.

Regarding the effectiveness of ATLM, the fact that 80.7% agree with the sentence "The ATLM stimulates the study" and 76.3% agree with "The use of ATLM favors the retention of knowledge" allows us to assume that the student shows he is sympathetic to these methodologies and believes in their effectiveness. This approval is corroborated in the following items: "Activities carried out in teams/groups favor learning and fixing the content", with which 73.3% agreed, and "The discussion of cases during the learning process better enables the student to the moments of decision-making ", with 88.2% agreement, with greater, significant agreement, for female students and older age group. We realized how much group activity and case discussions are valued by students. Teamwork was also highlighted in the work of Gomes *et al.* (2010), who found that 68% of students agree that working in small groups contributed to learning, a percentage close to this study. Khansari and Coyne (2018) evidenced the satisfaction that learners of the pharmacy course at a Californian university had in the use of TBL, since 92.5% of the sample said they felt more motivated to study for an activity in TBL format.

With regard to personal aptitude for ATLM, would the lack of habit of using such methodologies or the young age of students be justifications for a possible difficulty in adapting? The statement "Students are not prepared for ATLM due to lack of maturity" generated separation among the participants (44.2% disagreed, 32.4% agreed and 21.7% declared to be indifferent), but with greater agreement, significant, as to the greater the age group, corroborated by the reasons already explained above. Although the majority disagrees, the group of those who agree with the fact is significant. But, the next data draws more attention. Given the statement "Students are not prepared for ATLM as they are used to the traditional method", approximately half of the students agreed (51.1%), 28.3% disagreed, and 19% were indifferent to the statement. The large group of students who agreed leads us to reflect that changes in Brazilian compulsory education are necessary, from the first grades of elementary school to high school, so that students get used to the ATLM and can take advantage of them with excellence during the University education. In addition, these results show the dimension of the obstacle that the insertion of ATLM face in the medical education scenario. Many students feel they are unfit to deal only with active methodologies. Sousa *et al.* (2018) also expressed this thought when explaining that many students still have difficulties with ATLM due to the fact that traditional teaching methods are the most used in the school period that precedes University education. Having placed teaching on the agenda, regarding the teacher's role regarding the ATLM, it was clear that

most learners agree, albeit with safeguards, that the use of active methodologies requires more knowledge, effort and dedication time on the part of the instructor, as we can see in the following results. More than half (56.6%) disagreed with the statement “The teacher will have less work”, although only 20% of them were convinced to disagree, while a minority (17.3%) agreed. It is necessary to mention that regarding this statement, the highest, significant agreement is with male students, and the lowest, significant agreement is with students of the highest age group and the most advanced grades. Most students disagreed with the statements “The teacher will spend less time preparing activities” and “The teacher does not need to have as much knowledge as in traditional methodologies”. Again, the greatest agreement, significant, with the least use of time by the teacher to prepare the activities is with male students. Although the majority (55.8%) disagreed with the statement “Less teachers are needed, generating less cost for colleges”, most students were indifferent (25.5%), which may reflect a deficit in the discussion about medical teaching in the learner's curriculum, since the indifference and lack of conviction in the answers suggest ignorance on the part of the students.

Regarding the instructor's role in the current educational context, the learners opted for "Direct the study", "Create strategies which favor learning" and "Clear doubts" as the main functions of the teacher, demonstrating that wide access to a massive volume information currently leads to the need for a “filter” that selects knowledge in an objective way. This argument corroborates the fact that only 13% of the learners put “Provide all the content that will be evaluated” as a function of the instructor. The study by Yadav *et al.* (2018) conducted at a medical school in Nepal, corroborates this finding, considering that the interviewed learners placed the instructor as a catalyst for learning at PBL, behaving as a guide and director for learning and not as a sage on a stage. The answers found in the present study are also in line with what was reported by Morán in 2015, who stated that the instructor should select the content to be studied by the learners and give support and attention to the class.

5. Conclusion

The results show that, even though they do not participate in classes with ATLM very often (due to the type of methodology adopted in the institution), learners can be very interested, involved and motivated to participate in classes with active methodologies. Their intense learning perception at these moments is noteworthy.

It was observed that the students who gave higher scores to themselves, regarding ATLM, were the ones who were most favorable to the use of those frequently, which allowed us to outline the learner's profile which complies with the active methodologies.

The learners consider that the instructors' role should be that of a learning facilitator, who clear doubts, guides studies so that academic objectives are achieved and creates strategies for that.

We believe that the results obtained here can be extended to other institutions with a traditional curriculum, in which learners' contact with ATLM is still limited.

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